



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/830,088	04/23/2004	Nobuhiko Oda	57810-101	7535

7590 09/29/2006

McDERMOTT, WILL & EMERY
600 13th Street, N.W.
Washington, DC 20005-3096

EXAMINER

SCHECHTER, ANDREW M

ART UNIT	PAPER NUMBER
----------	--------------

2871

DATE MAILED: 09/29/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/830,088

Applicant(s)

ODA ET AL.

Examiner

Andrew Schechter

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 July 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) 5,6,9 and 20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4,7,8,10-19 and 21-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>4/23/04, 9/20/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.
2. The disclosure is objected to because of the following informalities: on p. 19, lines 4-5, "gate electrode 24a" should be --gate line 24a--.

Appropriate correction is required.

Claim Objections

3. Claim 23 is objected to because of the following informalities: "having a gate electrode and a storage capacitor electrode having a storage capacitive electrode between said insulating layer and said substrate" should be --having a gate electrode, and a storage capacitor electrode having a storage capacitive electrode, between said insulating layer and said substrate--. Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
5. Claims 1-23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites "said reflective material layer is formed by the same layer as a layer having a prescribed function different from said function for serving as said reflective layer". First, the examiner notes that the term "prescribed" adds little to the claim, since the device must be structurally different from the prior art, not merely different than the terminology used to describe it in a particular reference. Second, and more important, it is unclear what the relationship between the "reflective material layer" and the "a layer" can be. They are referred to as separate elements, but are formed "by the same layer"; does there have to be a part of "a layer" which does not function as a "reflective material layer"? Can they merely be a single layer which acts as both a reflector and also has another function? For examining purposes, it is assumed that the claim language is satisfied by having a single layer which has two such functions. Claims 2-16 depend on claim 1.

Claim 16 recites "a plurality of layers". Does this refer to a plurality of layers stacked vertically, or a plurality separated horizontally but patterned from a single original layer? Normally the former would be assumed, but the peculiar multiple uses of the term "layer", as discussed above, raises this question. For examining purposes it is assumed that the claim means to refer to layers stacked vertically, as in the Ti-Al-Ti stack disclosed in the specification.

Claims 1, 17, and 19 recite a "reflective region". (The other claims depend from these claims.) This is potentially unclear in the context of this invention. Does it refer to the region where an image is displayed by reflecting light, or does it refer to the region

where there are reflective layers which can reflect light? These two regions are not always identical, as seen below.

On the same issue, claim 22 recites "said gate electrode to be formed on the region corresponding to the reflective region". This is unclear depending on the meaning of "reflective region", as the gate electrode in the present disclosure, while formed of reflective material, does not appear to be in the "slashed" reflective region [70a] in the elected embodiment [see Fig. 8]. Does the applicant mean the term "gate electrode" to refer to the gate line more generally [as might be suggested by labeling 24a the gate electrode in Fig. 8, discussed above]? Or is it an oversight not to have the gate electrode drawn with slash marks in Fig. 8 to indicate that it is in the reflective region? For examining purposes, it is assumed that the "reflective region" is defined as where there are reflective layers which can reflect light, so that the gate electrode in claim 22 is in the reflective region by virtue of being reflective. If the applicant intends the other definition of "reflective region", it should be brought to the attention of the examiner immediately.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1-4, 7, 8, 10, 13-15, 17-19, and 21-23 are rejected under 35

U.S.C. 102(e) as being anticipated by *Song et al.*, U.S. Patent No. 6,614,496.

Song discloses [see Fig. 10, for instance] a display, having a reflective region [314 excluding 310], comprising: a reflective material layer [314], formed on a region of a substrate corresponding to said reflective region, having a function for serving as a reflective layer; an insulating layer [col. 7, lines 48-51, through which a contact hole 308 is formed] formed on said reflective material layer, and a transparent electrode [312] formed on the insulating layer, wherein the reflective material layer is formed by the same layer as a layer having a prescribed function different from said function for serving as said reflective layer [in this case, the "layer having a prescribed function" is the electrode 301, the prescribed function is to act as a second gate line/electrode and as a storage capacitor line]. Claim 1 is therefore anticipated.

Song discloses that the reflective material layer has both of said function for serving as the reflective layer and the prescribed function different from the function for serving as a the reflective layer, so claim 2 is also anticipated. The prescribed function different from said function for serving as said reflective layer is a function for serving as a gate electrode and storage capacitive electrode, so claims 3 and 4 are also anticipated. There is a storage capacitor having a storage capacitive electrode [the part

Art Unit: 2871

of 314 overlapping 312], wherein the reflective material layer having said function for serving as the reflective layer is formed by the same layer as a layer constituting a storage capacitive line [301] of the storage capacitive electrode, so claim 7 is also anticipated. There is a TFT formed between the insulating layer and the substrate, having a gate electrode [302], wherein the reflective material layer having the function for serving as the reflective layer is formed by the same layer as a layer constituting the gate electrode, so claim 8 is also anticipated. There is a transmissive region [310] provided with no said reflective material layer in addition to said reflective region, so claim 10 is also anticipated. There is a TFT formed between the insulating layer and the substrate, having a gate electrode [302], and a storage capacitor having a storage capacitive electrode [the part of 314 overlapping 312], wherein said reflective material layer having said function for serving as said reflective layer is constituted of a layer constituting the gate electrode and another layer constituting a storage capacitive line [301] of said storage capacitive electrode, so claim 13 is also anticipated. The layer constituting the gate electrode and the layer constituting the storage capacitive line are formed by the same layer, so claim 14 is also anticipated. There is a pixel electrode [312] including the transparent electrode, wherein the pixel electrode is constituted of only the transparent electrode without including a reflective electrode, so claim 15 is also anticipated.

Considering claim 17, *Song* discloses a display having a reflective region, comprising a reflective material layer [314], formed on a region of a substrate corresponding to said reflective region, having a function for serving as a reflective

Art Unit: 2871

layer; an insulating layer [in which the contact hold 308 is formed] formed on said reflective material layer, and a transparent electrode [312] formed on the insulating layer, wherein the reflective material layer is formed by at least one layer which is a gate electrode [302] and/or storage capacitive electrode [the part of 314 overlapping 312], so claim 17 is also anticipated. The reflective material layer is formed by a layer constituting the gate electrode and the storage capacitive electrode, so claim 18 is also anticipated.

Considering claim 19, *Song* discloses a method of fabricating a display having a reflective region, comprising steps of forming a reflective material layer also having a prescribed function different from a function for serving as a reflective layer on a substrate; patterning the reflective material layer to be formed on a region corresponding to the reflective region, forming an insulating layer on the reflective material layer, and forming a transparent electrode on the insulating layer, so claim 19 is also anticipated. This further comprises a step of forming a storage capacitor having a storage capacitive electrode, wherein the step of forming the reflective material layer includes a step of forming a layer constituting a storage capacitive line [301] of the storage capacitive electrode, and a step of patterning the reflective material layer includes a step of patterning the layer constituting the storage capacitive line to be formed on the region corresponding to the reflective region [note that the storage capacitive line overlaps the pixel electrode, so that overlapped area corresponds to the reflective region under either definition of "reflective region"], so claim 21 is also anticipated. There is a step of forming a TFT having a gate electrode between the

Art Unit: 2871

insulating layer and the substrate, wherein the step of forming the reflective material layer includes a step of forming a layer constituting the gate electrode, and the step of patterning the reflective material layer includes a step of forming the layer constituting the gate electrode to be formed on the region corresponding to the reflective region, so claim 22 is also anticipated. There is a step of forming a TFT with a gate electrode, and a storage capacitor having a storage capacitor electrode, between the insulating layer and the substrate, wherein the step of forming the reflective material layer includes a step of forming a first layer for defining a layer constituting the gate electrode and another layer constituting a storage capacitive line of said storage capacitive electrode, and said step of patterning the reflective material layer includes a step of patterning the first layer thereby forming the layer constituting the gate electrode and the layer constituting the storage capacitive line on the region corresponding to the reflective region, so claim 23 is also anticipated.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Song et al.*, U.S. Patent No. 6,614,496 as applied above, in view of *Kim*, U.S. Patent No. 6,570,634.

Song does not disclose a counter substrate with a convex insulating layer provided on region corresponding to the reflective region, whose thickness is so set that the liquid crystal thickness in the reflective region is substantially half the liquid crystal thickness in the transmissive region. *Kim* does disclose [see Fig. 6], for an analogous device, a counter substrate with a convex insulating layer [550] provided on region corresponding to the reflective region, whose thickness is so set that the liquid crystal thickness in the reflective region is substantially half the liquid crystal thickness in the transmissive region. It would have been obvious to one of ordinary skill in the art at the time of the invention to use such a substrate, motivated by *Kim's* teaching that by thus properly designing the cell gaps, a "transflective LCD device may modulate the incident rays more efficiently" [col. 5, lines 12-15]. Claims 11 and 12 are therefore unpatentable.

10. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Song et al.*, U.S. Patent No. 6,614,496 as applied above, in view of *Ha et al.*, U.S. Patent No. 6,919,934.

Song does not disclose that the reflective material layer consists of a plurality of layers, understood to mean a plurality of layers stacked vertically. *Ha* discloses that an analogous reflective layer, also used as a gate electrode, is made of a multi-layer of aluminum and molybdenum, in order to avoid hillock-formation and other chemical problems which occur when using a single aluminum layer [col. 6, line 59 – col. 7, line 2]. It would have been obvious to one of ordinary skill in the art at the time of the invention to use such a plurality of layers, motivated by *Ha's* teaching that this produces a more reliable electrode. Claim 16 is therefore unpatentable.

11. Claims 7, 13, 14, 21, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Song et al.*, U.S. Patent No. 6,614,496 as applied above, in view of *Choi et al.*, US 2002/0033928.

Song discloses that the reflective material layer is formed by the same layer as a layer constituting a storage capacitive electrode, which is attached to an electrode line [301]. This line functions as the neighboring gate electrode and as a storage capacitance line, and as such it was applied to claims 7, 13, 14, 21, and 23 above. However, it could be argued that the term “storage capacitance line” is meant as a term-of-art requiring it to be distinct from a neighboring gate line. The examiner does not assume that this is the case; if this is the intent of the applicant, it must be made explicit in the next response so that the scope of the claims will be clear.

Assuming for the sake of argument that this is the intent of the applicant, the examiner cites *Choi* as evidence [paragraph 0008] that having the storage capacitor connect to a dedicated storage capacitance line formed in the same layer as the gate line and gate electrode [Fig. 1B] and having it connect to a neighboring gate line [Fig. 1A] are art-recognized equivalents. It would therefore have been obvious to one of ordinary skill in the art at the time of the invention to have a dedicated storage capacitance line in the device of *Song*, rather than having the storage electrode connect to a neighboring gate line, motivated by the art-recognized equivalence of the two structures. Claims 7, 13, 14, 21, and 23 are therefore unpatentable, even given this different understanding of the claim language.

Election/Restrictions


12. Claims 5, 6, 9, and 20 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made without traverse in the reply filed on 19 July 2006.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Schechter whose telephone number is (571) 272-2302. The examiner can normally be reached on Monday - Friday, 9:00 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Nelms can be reached at (571) 272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Andrew Schechter
Primary Examiner
Technology Center 2800
24 September 2006